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ABSTRACT

This report describes a study of factors which appear to influence the "shareability" of audiovisual materials in the field of veterinary medicine. Specific factors addressed are content quality, instructional effectiveness, technical quality, institutional support, organization, logistics, and personal attitudes toward audiovisuals. (Author/CO)

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A Model for Producing and Sharing Instructional Materials in Veterinary Medicine

Washington State Univ, Pullman Coll of Veterinary Medicine

Prepared for

National Medical Audiovisual Center, Atlanta, GA

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A MODEL FOR PRODUCING AND SHARING INSTRUCTIONAL MATERIALS IN VETERINARY MEDICINE

FINAL REPORT
March 30, 1978

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16. Abstracts This report describes a study of factors which appear to influence the shareability of audiovisual materials in the field of veterinary medicine. Specific factors discussed are: content quality, instructional effectiveness, technical quality, institutional support, organization, logistics, and personal attitudes toward audiovisuals. Methods used in this study to develop a content analysis for the field of Veterinary Pathology and an instructional guidebook for producers of Veterinary Audiovisuals are also described in this report.

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SCHEDULE OF EVENTS

September 1976	- Federal Contract No. NO1-LM-6-4750 awarded to Washington State University to study models of shareability. (Dr. Billy C. Ward and Dr. Alphonsus Niec, project directors).
October 1976	- Five individuals selected for advisory group. (Dr. Algernon Allen, Dr. Edward Ames, Dr. Kenneth Pierce, Dr. David Tyler, and Dr. John Van Vleet).
October 1976	- Letters to veterinary colleges and other organizations soliciting interested participants for content analysis and production of AT lessons.
November 1976	- Project directors met to plan content analysis workshop.
December 1976	- Content analysis team leaders selected.
December 1976	- Content analysis workshop with project directors, advisory group and team leaders.
February 1977	- Content analysis team leaders selected additional team members.
March 1977	- Advisory committee met in Atlanta to review first draft of content analysis. Final format selected.
April 1977	- Letter of solicitation sent to veterinary colleges and other organizations for production of AT lessons.
May 1977	- Twenty AT lessons selected for production.
June 1977	- Advisory meeting in Denver, Colorado. Second review of content analysis. Review of evaluation and sharing models, developed plan for AVMA exhibit.
July 1977	- AVMA meeting in Atlanta. NPID exhibit of AT programs and preliminary draft of content analysis and production guidebook. Sharing and certification model presented to AAVMC.
August 1977	- Advisory meeting in Wulff Harbor, Missouri. Final review of content analysis. Practice review of several AT lessons using proposed evaluation model. First draft of Chapters 1-3 of Guidebook reviewed.

Schedule of Events - 2

November 1977 - Content analysis published and presented to ACVP. NPID display exhibited.

January-March 1978 - Completion and publication of guidebook. Evaluation of AT lessons. Final report submitted.

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A MODEL FOR PRODUCING AND SHARING INSTRUCTIONAL MATERIALS IN VETERINARY MEDICINE

Final Report

for

NLM Contract NO1-LM-6-4750

I. INTRODUCTION

The goal of this project was to develop an instructional development model to prepare shareable instructional materials. The need for such an instructional development model has been accentuated by the recent awakening of veterinary educators to the desireability of using prepared instructional lessons. The proposed model is designed to facilitate the development of instructional materials to be used in self-instructional modules, lectures, review units, or as diagnostic aids. It is hoped that the results of this effort will assist in reducing the overall instructional costs by providing a mechanism for developing high quality, widely shareable instructional lessons for veterinary medical education. This report outlines a protocol for developing and implementing a system to produce, evaluate, and certify prepared instructional lessons.

Project Objectives and Design

The major objectives of the project were to develop and compare, in terms of shareability, instructional development models for producing instructional packages in veterinary medicine and to develop a

system of evaluation leading to certification. An instructional development model designed to promote maximum shareability should include the following conditions:

1. Uniform learning outcomes must be generally agreed upon.
2. Instructions for producing effective learning packages must be accessible and comprehensible.
3. The instructional lessons must be reliable and valid, as determined by a standardized evaluation process.
4. A system must exist to facilitate sharing.

Topics and Objectives Extracted from a Content Analysis

It is reasonable to conclude that a widely shareable instructional lesson will address learning outcomes that are generally agreed upon by veterinary educators. A few attempts at collecting a national consensus of learning outcomes in specific fields have met with some success. Veterinary public health serves as a good example. However, most of the veterinary specialty groups have not specified learning outcomes. Maximum shareability of instructional packages will be facilitated by future efforts of specialty groups.

Instructional Lessons Produced Through a Guidebook

Examination of instructional materials presently available reveals undesirable variations and major deficiencies with respect to instructional design and technical quality in relationship to intended learning outcomes. Most of the developers of veterinary instructional programs have sufficient content expertise but little or no training or guidance in the principles of design and production. A readily accessible guidebook which presents these principles clearly and

concisely to the lesson developer is required to direct the production of shareable products.

Lessons Evaluated for Design, Technical Quality and Content Validity

An instructional package which demonstrates validity in respect to predictable student performance, and which demonstrates reliability in terms of content accuracy, learning effectiveness and efficiency is a more shareable product. Reliability, validity, appropriate instructional design and satisfactory technical quality must be established by standardized evaluation procedures.

A System of Certification and Sharing Established

Finally, a system to facilitate sharing between veterinary institutions and organizations must be established. To be effective this system should provide incentive and reward features for producers, a mechanism for evaluation which leads to certification of quality programs, an instrument to publicize certified lessons and a specified distribution mechanism.

II. SPECIFYING UNIFORM LEARNING OUTCOMES (CONTENT ANALYSIS)

Instructional packages directed toward learning outcomes (objectives) extracted from a pool of objectives generally agreed upon as desirable for the graduating D.V.M. would be more shareable than instructional packages directed at learning outcomes considered to be important only to one or a few veterinary educators. The question is: Can a pool of stated learning outcomes have general acceptance? Is it possible to specify and establish general agreement about what must be learned about a discipline? The answer is yes to both of these

questions. It is not only possible, it is mandatory, particularly if the production of shareable instructional lessons is desirable.

Task Analysis/Content Analysis

There are at least two procedures that can be used to generate information about what must be learned by the competent graduate D.V.M., a task analysis and a content analysis. A task analysis focuses on job performance. It addresses the question "What do veterinarians do?" A comprehensive task analysis in veterinary medicine represents an expensive and formidable challenge. A content analysis for a veterinary medical discipline can be more easily accomplished than a task analysis.

A content analysis addresses the goal of the veterinary curriculum from the perspective of a discipline or a field of study. The question that guides the content analyst is "What knowledge and skills in the discipline contribute to quality veterinary service?" Whereas, a task analysis focuses on the job to be performed, starts with broad general tasks and is produced by observing veterinarians performing tasks, a content analysis focuses on the discipline, starts with basic knowledge and skills, and is produced by content experts in the discipline

In both cases the greater the number of qualified people involved in development or review, the more reliable, valid and generally acceptable will be the finished document. The performance of a task analysis does not preclude the need for a content analysis. Neither does the performance of a content analysis preclude the need for a task analysis. In fact, the two types of analyses could be highly revealing concerning perceptions of educators toward educational needs of the profession.

Content Analysis in Veterinary Pathology

In the course of this project a content analysis in veterinary pathology was completed. The document produced by this effort will be used to identify topics and objectives to be included in prepared instructional lessons. The impetus for the content analysis was provided by a small group of teaching pathologists in the American College of Veterinary Pathologists. Similar content analyses in other disciplines could be performed under the auspices of the various specialty colleges and organiaation of the American Veterinary Medical Association. Although The Content Analysis in Veterinary Pathology was greatly facilitated by the availability of funds from a federal contract, external funding is not requisite to the performance of this task.

The Content Analysis in Veterinary Pathology was generated by using special expertise of veterinary pathologists from each of the specified subdisciplines of veterinary pathology. General pathology was subdivided into four divisions; Systemic pathology into eleven divisions; and Clinical pathology into four divisions. A team leader was selected for each division. The team leader was selected because of his or her recognized knowledge in a specified area. Each team leader selected a few other colleagues as assistants.

The team leaders were assembled for a two-day meeting for instruction concerning the goals and expected outcomes of the project. Team leaders received travel expenses and an honorarium for their efforts. An advisory group consisting of four pathologists and three educational consultants supervised the project. The advisory group assumed the responsibility of review and editing the information generated by the working teams. One hundred eleven individuals representing

40 institutions (21 colleges of veterinary medicine) participated in the project.

A uniform format for each section of the content analysis was formulated. Since everyone agreed that the most important goal in teaching veterinary pathology was to enable the student to use pathology knowledge and skills to solve clinical problems, a case analysis format, supplemented with a list of didactic objectives, was developed. An outline of parts of the Content Analysis is included on the following pages.

CONTENT ANALYSIS OF VETERINARY PATHOLOGY

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URINARY SYSTEM

Team Leader
Wayne Crowell

Team Members
Harold Casey
David Gribble
Robert Phemister
Barry Stuart

CASE ANALYSIS

The focus of the case analysis is on problem-solving situations. The didactic section should be viewed as enabling objectives.

DIDACTIC MATERIAL

Pathophysiologic Disturbance (Response to Injury)

Included here are learning objectives for the identification and description of lesions and pathogenesis of the responses of the urinary system to injury.

SPECIAL OBJECTIVES

Each body system includes some special objectives unqiue to that system.

LABORATORY TESTS

The student is asked to explain the use of tests used to evaluate the function of the urinary system.

DISEASES OF PRIMARY IMPORTANCE

The student is asked to:

Define
List causative factors
Discuss laboratory confirmation
Identify and describe gross and microscopic lesions
Outline the pathogenesis
Name and correlate clinical signs
Outline natural history
State comparative aspects

for each of the diseases considered to be of primary importance in the urinary system.

DISEASES OF SECONDARY IMPORTANCE

The student is asked to:

Define
List causative factors
Discuss laboratory confirmation
Identify and describe gross lesions

for each of the diseases considered to be of secondary importance in the urinary system.

DISEASES OF TERTIARY IMPORTANCE
The student is asked only to define the diseases of tertiary importance.

MULTISYSTEM DISEASES
The student is asked to identify and describe the gross lesions and outline the pathogens of the urinary lesions for those diseases which have multisystem involvement.

DIFFERENTIAL FEATURES OF COMMON DISEASES
The student is expected to compare and contrast sets of urinary diseases for each species.

GLOSSARY
The student must define, spell, and use the terms listed as special vocabulary for the urinary system.

Because the Content Analysis was generated from a broad national base with participants recognized for content expertise, it is anticipated that the document will receive widespread acceptance. It would be naive, however, to expect that there will not be some argument with what has been generated. For this reason, the Content Analysis has been designated as a working document, subject to review and revision.

III. PRODUCING EFFECTIVE LEARNING PACKAGES (PRODUCTION GUIDE)

Although a large number of books and journal articles have been published on the preparation of lessons, they suffer from one or another deficiency, such as being incomplete, too superficial, too technical, or are incomprehensible to the veterinary educator. Therefore, a guidebook was written that would assist a content specialist in the preparation of a lesson in a form that clearly illustrates the application of correct design and media principles in veterinary medical education.

The guidebook, entitled A Guide to Lesson Preparation for Veterinary Medicine, is divided into five chapters. The title and purpose of each chapter is listed in Figure 1.

Figure 1. A Guide to Lesson Preparation for Veterinary Medicine
An Overview

Chapter	Title	Purpose
1	Organizing for Instruction	To help the user of the guidebook understand the strengths and limitations of the proposed approach to lesson preparation.
2	Designing a Lesson	To present the elements of a lesson and the steps of producing a lesson designed to reach specific instructional goals.
3	Selecting the Media	To assist the lesson designer in the selection of a medium to accomplish the objectives of a lesson.
4	Antecedents and Corollaries to Lesson Preparation	To examine three topics that logically come before or after lesson preparation as part of a comprehensive instructional program.
	4A Analyzing Curricular Needs	To examine the roles of task analysis and content analysis when making decisions about curricular requirements.
	4B Budgeting for Lesson Preparation	To condsider the use of a cost effectiveness ratio as a meaningful approach to budget decisions about lesson preparation.
	4C Developing a System for Sharing Instructional Materials	To investigate some of the values of a sharing system. To examine the barriers to sharing materials.
5	Evaluating Instruction	To delineate evaluation procedures required to validate the effectiveness of a lesson.

Guidebook Chapter II (Design Principles)

Chapter II focuses on design principles. The veterinary educator is directed to proceed in a stepwise fashion from element to element to prepare a lesson to reach desired instructional goals. A list of the twelve elements of an instructional lesson is presented in Figure 2.

Figure 2. Elements of a Lesson

Purpose and Reason	Prerequisites
Objectives	Design
Title	Study Guide
References	Self Test
Copyright	Validation
Credit	Instructor's Guide

The most important feature of this chapter is the emphasis on the relationship between information to be presented and the instructional goal of a lesson, using the components of information, interaction, and feedback. Each instructional goal is subject to distinctive learning principles. The method of presenting information should be determined by the instructional goal. A lesson designed to achieve an instructional goal requiring recall of information utilizes different principles of design than a lesson which requires analysis or synthesis of clinical information. For instance, if an instructional goal relative to the signs of disease states that "a student is expected to be able to list the clinical signs when given the name of a disease," the lesson must be designed to provide sufficient opportunity for repetition and practice.

Interaction and feedback segments should be interspersed throughout the lesson to provide the student with the opportunity to check the understanding of concepts presented or to practice using information.

Pilot Study with the Guidebook

A pilot study was performed to determine if the guidebook provided effective assistance to the veterinary educator in producing a well designed lesson. Lessons produced via the guidebook (Model A) were compared with other types of instructional materials (models B and C).

Model A - Characteristics

Topics and objectives were extracted from The Content Analysis in Veterinary Pathology. Instructional lessons were produced through the use of a preliminary draft of chapters II and III of the guidebook.

Model B - Characteristics

Instructional materials were selected from the catalogue of AVMA materials. The major feature of these materials was that they were well organized instructional programs which had received student awards of excellence at the previous national meetings.

Model C - Characteristics

Unstructured slide sets containing high quality kodachromes were grouped according to a theme. If a prepared instructional lesson is defined as an organized unit of instruction that specifies student performance, includes

resources necessary to accomplish expected outcomes and contains an evaluation procedure, then these slide sets do not qualify as prepared instructional lessons. However, there is some evidence that they possess desirable features in terms of shareability. Because they are not structured, they may be used as raw material to be included in lectures, autotutorial lessons, review units and competency tests.

Various evaluation procedures were used to investigate the strengths and limitations and the advantages or disadvantages of each model. Each model was evaluated for content quality, instructional design quality, and media quality.

The evaluations revealed that producers of Model A instructional materials who most closely followed the guidebook produced lessons that most closely met evaluation requirements; Model B materials which most closely resembled Model A materials received high evaluations; the nature of Model C materials was such that they were not amenable to evaluation procedures for instructional design and content validity.

The models were reviewed by potential users, including some students, to determine the appropriateness of using each model for various instructional activities (lecture, autotutorial, etc.). The results indicated that Model A was generally considered more acceptable than Model B and Model C. Model C was viewed as most acceptable for lecture material but generally not acceptable for any other category of usage. A survey of potential audiovisual users conducted at the AVMA convention in July 1977, revealed that lessons that had proven

reliability and validity were desirable, even if they were more expensive.

The concept of the use of interaction and feedback segments represents a departure from most of the audiovisual lessons now in use in veterinary education. Most audiovisual programs are designed as packages of information, similar to most textbooks. Model A interspersed interaction and feedback segments between information segments. For instance, a small piece of information or a concept is discussed then a question or series of questions is asked to determine if the information or concept has been learned. The student is then provided with feedback on the correct responses. The importance of the interaction and feedback feature of Model A was examined by having five students at each of four institutions study a lesson representing Model A, and five students at the same institutions study the same lessons with interaction and feedback segments removed.

Students using the lesson with interaction-feedback segments achieved 46% on the pretest and 93% on the posttest, creating a gap in the score of 47%. Students using the same lesson without interaction and feedback segments achieved 53% on the pretest and 84% on the posttest, with a gap score of 31%. A statistical analysis of these results indicated significance at the .003 level.

These studies support the hypothesis that instructional lessons produced in accordance with the principles of design and media quality introduced in the guidebook achieve higher standards of quality and are therefore more shareable than presently available lessons.

The development of 20 prototype instructional lessons was contracted through project funds. Producers with a variety of backgrounds

were selected and provided preliminary drafts of chapters II and III of the guidebook. The evaluation of the resulting lessons indicated that some of the producers adhered more closely to the directions contained within the guidebook than others. An examination of the backgrounds of the producers revealed that the following factors influenced the degree of adherence to the guidebook:

1. Instructional Methodology - Producers that rely primarily on the lecture as a teaching strategy were less likely to incorporate guidebook principles than those who are more familiar with the use of independent study as a learning strategy.
2. Experience in Producing Instructional Lessons - Producers who had previously developed instructional lessons were more likely to use the guidebook than those who had little or no past experience in producing packaged instructional programs.
3. Supervision - Producers that were in proximity (at the same institution) to members of the project advisory team were most likely to adhere to the provisions of the guidebook. This factor overshadowed the previous factors.

Based on this information, it is recommended that regional or national workshops providing instructions on the use of the guidebook be conducted. The results of this study provide strong evidence that, used properly, the guidebook can provide valuable assistance in the production of high quality and therefore, shareable instructional lessons.

IV. RELIABILITY AND VALIDITY (EVALUATION)

The most shareable instructional lessons are those for which there is some assurance that they meet standards of quality. The determination of lesson quality requires evaluation of content, instructional design and medium. The first component which should be evaluated is content. If a lesson presents incorrect information, the effectiveness of instruction is impaired. Evaluation of instructional design assures that the content is presented in a form that promotes achievement of the instructional goals. An evaluation of the medium provides a means of rating the technical quality of a lesson. A lesson must be evaluated in each of these three areas by specialists other than those involved in the production to provide objectivity. However, it is also necessary that the evaluation process first occur within the producing institution.

Although evaluation of an instructional lesson is important, the final test of a lesson is its effectiveness when used. The ideal mechanism to determine the effectiveness of a lesson involves a "test run" with a representative student sample. Validation using student representatives to test the effectiveness of a lesson should be performed, if possible, by the institution which produced the lesson prior to release for outside distribution. This form of student validation combined with the above evaluation procedures provides very useful information concerning shareability of a lesson.

Sample forms which can be used for evaluation are provided in the appendix. A detailed discussion of the use of these forms is presented in the guidebook along with the procedure for obtaining student validation.

Many of the issues addressed in this report serve as a foundation of prerequisites for a system of sharing instructional lessons in veterinary medicine. A content analysis, such as the one performed in veterinary pathology, provides a document of national consensus from which topics and objectives may be extracted, the Guide to Lesson Preparation directs a potential producer in the development of quality lessons and the evaluation plan helps to assure that quality has been attained. The fourth condition needed to facilitate maximum shareability of instructional lessons is the adoption and implementation of a national system for sharing. A workable sharing system depends upon three important features:

1. The provision of incentive and reward to potential producers.
2. A mechanism for determining the quality of materials to be distributed.
3. An instrument to publicize available quality programs.

One of the principle barriers to the production of quality instructional lessons lies in lack of an incentive mechanism for the producer. At most of the colleges of veterinary medicine, where potential producers are most likely to be located, the reward mechanism is based upon research efforts as measured by the number of published scientific reports. At the present time, little recognition is given to the individual who develops quality instructional lessons. Until this inequality is rectified, the most valuable resource for the production of shared instructional packages will be untapped.

One of the solutions to this problem relates to a system of certification of lessons providing "publication parity." Lessons with topics and objectives from a content analysis, produced via

instructions from the guidebook and evaluated relative to strict standards of quality must be recognized and certified by a national veterinary educational organization. The following is an outline of a recommended procedure for certification and sharing of instructional materials in veterinary medicine.

A MODEL FOR CERTIFICATION AND SHARING OF VETERINARY INSTRUCTIONAL MATERIALS AMONG VETERINARY INSTITUTIONS

1. The standards for evaluating and producing self-instructional materials shall be adopted by the American Association of Veterinary Medical Colleges (AAVMC).
2. Any institution that produces a program under the established standards may copyright the program and submit to the AAVMC for review and possible endorsement.
3. Certification by the AAVMC shall qualify the program to carry an appropriate AAVMC seal of approval, and a published review in the Journal of Veterinary Medical Education.
4. The AAVMC will publish an annual updated listing in the Journal of Veterinary Medical Education of all AAVMC-approved programs. The producing institutions shall agree to sell copies of the AAVMC-approved programs to other cooperating veterinary schools and departments at reasonable costs.
5. Cooperating institutions shall be listed at the end of each annual review listing published in the Journal of Veterinary Medical Education.

6. Noncooperating institutions*, groups or individuals will be able to purchase AAVMC-approved programs at a commercial rate to be negotiated with the producing institution.

VI. SUMMARY OF CONCLUSIONS ON SHAREABILITY

A successfully coordinated program aimed at promoting shareability of instructional packages in veterinary medicine would result in the saving of an enormous amount of money and time. Presently, because of the lack of coordination, duplication of effort is widespread among veterinary educational institutions. Absence of accepted standards of quality discourages interchange between colleges.

Veterinary educators have only in the last several years appreciated the usefulness of prepared instructional packages. Autotutorial programs are now widely used for independent study, lecture supplement, review, continuing education and many other teaching-learning activities. It is estimated that the 22 veterinary schools in the nation invest $2 million for the production of materials. A workable sharing system would allow this money to be spent more wisely and efficiently.

There are many specialty fields in veterinary medicine and a limited number of experts in each field. A sharing system could allow each institution to redistribute its resources to produce materials from a position of strength and to obtain materials to fill areas of

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*Institutions include schools, colleges and departments of veterinary medicine and science as well as medical schools or individuals.

deficiency. Rather than viewing the experts as the property of the institution, they would be considered a national resource. Sharing these national resources would be of benefit to veterinary students and practitioners in continuing education across the country.

A sharing system would insure an increase in the number of lessons available. It should emphasize quality lessons by redistributing resources.

Though the size of the veterinary profession permits a great amount of interinstitutional communication, there is at present a lack of cooperation concerning sharing of instructional materials. It will require close cooperation to establish a successful sharing system.

While the values of a sharing system are many, there are administrative and personal obstacles that must be resolved to establish such a system. At a conference in December 1976, twenty-one veterinary pathologists representing 17 institutions considered the problems interfering with the development of a system for sharing instructional materials in veterinary pathology. The list of problems generated was comprehensive and appear applicable to the entire veterinary profession.

These problems logically separated into the following major categories:

1. Content quality
2. Instructional effectiveness
3. Technical quality
4. Administration and institution
5. Organization and logistics
6. Personal attitudes.

Content Quality

If there are errors in the lesson it does not matter how well the information is presented. Other content problems listed below, such as insuring that outdated information is removed from distribution, were considered important.

Problems in Content Quality

Errors in content
Updating content
Emphasis of topics
Geographic differences

To be effective a sharing system must contain a mechanism to control problems in content quality. Some of these problems must be solved during production, others are administrative problems. An effective system for sharing must have a means of monitoring the currency of the materials distributed. The review and certification procedure which uses peer evaluation will help to insure content validity.

Instructional Effectiveness

Several problems relating to instructional excellence were identified.

Problems of Instructional Effectiveness

Curricula differences
Inconsistent teaching methods
Instructor differences
Student differences
Geographic references

Almost everyone has studied materials that created more confusion than learning. Guidelines for design of effective teaching packages must be available in a form that can be easily understood by the veterinary educator. The review and certification procedures must include educational design as an important factor.

Media Quality

The third concern was about the quality of the medium used to communicate information. How good would copies be? Would the information be distorted or lost through a duplicating process? Was an appropriate medium selected for the type of information?

Problems of Media Quality

Appropriate use of media
Quality of copies
Uniform quality of media
Differences in accents (audio)

Most veterinary institutions have media production centers. Standards of quality need to be established for certified shareable lessons. Guidelines for selection and use of media must be available.

Administration and Institution

Although most instructors agree to the need for a greater number of quality lessons, the time and effort to produce these materials are great and the personal benefits rather small. It is more often to an instructor's advantage to spend the time on research rather than lesson preparation. Few colleges place significant value on lesson preparation when it comes to the yearly review for promotion or raise.

Below are some of the problems that reflect administrative and institutional decisions that affect sharing;

Problems of Administrative and Institutional Support

Recognition for effort
Ownership--restriction by institution
Cost of production
Cost of purchase
Recognition of importance of materials to instruction
System for purchase or production
Facilities for production
Facilities for using the materials

A sharing system must address each of these problems. Lesson certification leading to author recognition and reward will serve as a necessary incentive. For production of lessons interinstitution cooperation will be an integral part of successful sharing.

Organization and Logistics

The following list of problems must be considered in the operation of a sharing system. Who will store and distribute the materials? How will the evaluation process be coordinated? How much will the system cost? The answers to such questions will define the structure of the sharing system.

Problems of Organization and Logistics

Coordinating operations
Copyright
Costs:
 Purchase
 Production
Updating
Cataloging and storage
Distribution
Responsibility for originals
Previewing materials

Personal Attitudes

The final category of problems refers to personal concern such as plagiarism, fear of appearing inadequate, selfishness, and so on. As one instructor expressed an aspect of the problem: "If I prepare lessons in my area of expertise why would another institution desire to hire me?"

The next list includes some of the problems under the category of personal attitudes. Many of these problems will be resolved by the cooperative efforts of institutions to establish a successful sharing system.

Problems of Personal Attitude

Differing opinions
Protecting expertness
Hiding inadequacies
Fearing plagiarism
 (others do to me)
Fearing stealing
 (I do to others)
Personal shortcomings
Priorities

Types of Sharing System

There are several models after which the sharing system could be designed. The industrial model of private enterprise has possibilities. Under this model each institution could operate as an independent corporation in producing goods (instructional materials) and the other institutions would be consumers. To some degree this is the present condition. The private enterprise system, however, works on a competitive basis with quality controlled by the consumer. If several companies produce a car, the consumer has a choice of which he likes the best. This model could resolve some of the barriers of sharing related to quality, but would inhibit some of the primary values of the sharing system, such as avoiding duplication and maintaining cooperation and allowing redistribution of resources.

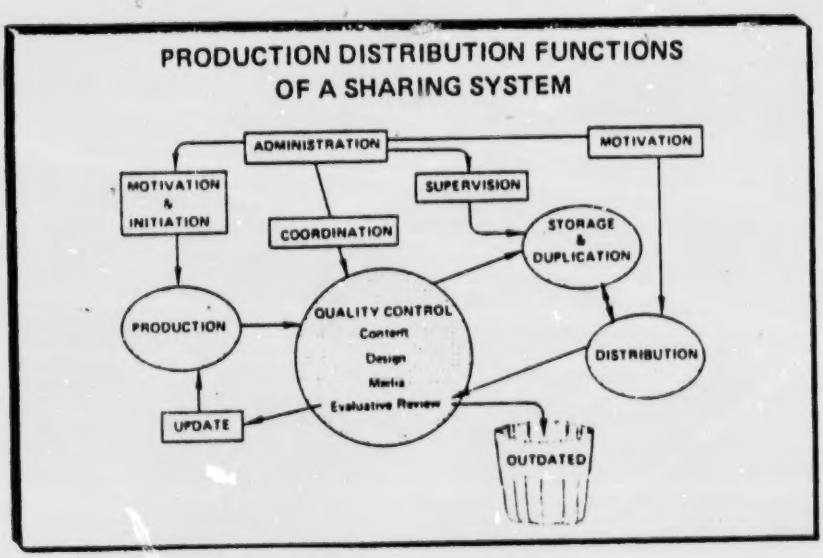
Another model for producing and sharing goods used in some countries is built around the philosophy of producing what one can and obtaining what one needs. This model also has been used to a small degree. There is a company that encourages authors to submit lessons with the incentive that the author's institution will receive a copy of all the other lessons submitted. This model has been successful in increasing the quantity of materials, but has had little effect on improving quality.

A third model is the "co-op" system, developed by small farmers to stay in competition with conglomerates. This system has been used with success in the health professions under the name of "consortium".

Any of the three models could operate effectively as a means of sharing instructional materials, provided each of the barriers described previously is resolved. One of the main barriers is to convince

veterinary faculty that one of the primary functions of an instructor is to produce instructional materials. It must be recognized that presenting a lecture to students to arouse interest is valuable but that dictating notes is not valuable.

Whether the system incorporates the principles of private enterprise, operates under the auspices of a professional organization, or develops as a coalition of institutions as a consortium, specific production and distribution functions as illustrated below must be fulfilled:



There must be a person responsible for the coordination of all activities. Without a central administrator the production, storage, evaluation and distribution functions would result in a mass of confusion. Who would sent what to whom and when? Someone must take the responsibility for these decisions.

The system might function as follows: The production of materials would originate upon request. For instance, institution "A" would request a lesson covering a topic meeting specific objectives. A library search might uncover the lesson in the central files and it would be shipped to the institution. If there were no lessons in existence, two items must be investigated. Is this a lesson that is important in the training of a veterinarian, and who should produce the lesson? If the lesson is important, then all veterinary institutions could use it, and the best person or group of people should produce it.

Both during and after production, the lesson would be subjected to a stringent evaluation-validation process as described in the guidebook. When the lesson met the standards of quality it would be stored, duplicated and distributed.

That is not the end. Veterinary medicine is a changing field. Each time it is used it will be reviewed by the instructor. An instructor who finds a lesson that contains outdated information would inform the central organization. A reevaluation process would be initiated. The lesson would be updated and redistributed or it would be labeled outdated and recalled.

The efforts to develop a sharing system have begun. Individuals at many of the colleges have been working toward this goal. The services of veterinary medicine to society, however, are too important to continue with a policy of isolation and jealous protection of expertness. It is in the national interest that the training of veterinarians incorporate the best instructional methods and all students have available the best instructional materials that the profession can provide.

Quality instruction must become a priority in deeds as well as words, at every institution and for every instructor. The problems related to producing and sharing materials cannot be resolved by a few dedicated individuals.

EVALUATION OF CONTENT QUALITY

Title _____

Author _____ Evaluation Date _____

Audience Level _____

1. Is the material appropriate for the stated audience level? ___YES ___NO

2. Accuracy:

   A. Are the facts or concepts accurate?..... ___YES ___Needs Revision

   B. Are the facts or concepts current?..... ___YES ___Needs Revision

3. Content:

   To meet the requirements of the objectives, the information in the lesson is:

   Sufficient _____ Insufficient _____ Excessive _____

4. Are the objectives consistent with

   A. NPID Content Analysis?..... ___YES ___NO

   B. If not--are they reasonable expectations for the intended audience?..... ___YES ___NO

5. Media:

   A. Is the quality of the media acceptable?..... ___YES ___Needs Revision

   B. Does the media, adequately present the content?..... ___YES ___Needs Revision

6. Is the title an adequate description of the lesson?..... ___YES ___NO
   If no, suggest new title

   _____

   _____

7. Is the purpose as stated in the study guide acceptable?..... ___YES ___Needs Revision

8. Summary: Based on your overall assessment.....

   ___ Lesson is acceptable in present form
   ___ Lesson is acceptable, minor revision suggested
   ___ Lesson needs minor revisions
   ___ Lesson needs major revisions
   ___ Lesson is not recommended for approval

EVALUATION OF INSTRUCTIONAL DESIGN

Title: _____

Author: _____ Evaluation Date _____

1. A. Is there an Instructor's Guide? ..... ___YES ___NO

   B. If no, is one needed? ..... ___YES ___NO

2. Is the Study Guide complete? ..... ___YES ___Needs Revision

   Including:

   a. The title of the program (page 2 – 5)
   b. The purpose and rationale of the program (page 2 – 2)
   c. The objectives (performance, conditions)* (page 2 – 12)
   d. Estimate of time required to complete program (page 5 – 27)
   e. Prerequisites for learning and/or prerequisite test (page 2 – 20)
   f. Materials and equipment provided and/or needed
   g. Copyright notice and/or clearance statement (page 2 – 6 & 3 – 35)
   h. Directions for the use of the program (page 3 – 17)
   i. Narrative script
   j. Interaction segments (page 2– 28)
   k. Self test (page 2 – 62)
   l. Production credits
   m. References
   n. Intended audience (on separate page) (page 2 – 11)

   *Objective's standards should be determined/specified by the instructor using the program.

3. Organization/Design

   A. Are the information segments organized so the learning intended by the objectives (recognition, recall, comprehension, application, analysis, synthesis, evaluation) can be accomplished? ..... ___YES ___Needs Revision **

   B. To meet the requirements of the objectives are the student's interaction and feedback segments. .....

      Sufficient ____ Insufficient ____ Excessive ____

4. Is the choice of media appropriate to the stated objectives and subject matter? ..... ___YES ___Needs Revisions **

   ** Comments, correction, recommendations should be specified, by slide number or scene identification, on the reverse side of this page, or mark on script.

5. Summary: Based on your overall assessment. ....

   ___Lesson is acceptable in present form
   ___Lesson is acceptable, with minor revisions suggested
   ___Lesson needs minor revision
   ___Lesson needs major revision
   ___Lesson is not recommended for approval

EVALUATION OF MEDIA

TITLE _____

AUTHOR _____ EVALUATION DATE _____

INTENDED AUDIENCE _____

EVALUATOR NAME _____

ADDRESS _____

1. is acceptable in present form
2. is acceptable with minor suggestions recommended
3. unacceptable - needs minor revision
4. unacceptable - needs major revision

Does Not Apply	1	2	3	4

A. Appropriateness of Media to the Objectives:

CONCRETE (3-37)

1. Are the *presentation modes* (visual, audio, kinesthetic, etc.) appropriate to the concrete aspects of the objective (Pages 3-37 & 3-38)?
2. Are the *media types* (realia, print, static visuals, motion, audio, programs, simulations, etc.) appropriate to the presentation modes?
3. Are the *media formats* (slides, video tapes, specimens, etc.) appropriate to the media types?

ABSTRACT (3-38)

4. Are the presentation modes (print or audio) appropriate to the *abstract aspects* (those things which must be experienced through written or spoken language) of the objectives?
5. Are the support media types (charts, graphs, diagrams, etc.) appropriate to the presentation modes?
6. Are the media formats (slides, video tapes, specimens, etc.) appropriate to the media type?

B. Copyright (3-35)

Is there an affidavit stating all material is either original and free of copyright restrictions or that copyright release has been obtained and is on file with the producer: (if none - check block number 4).

C. Format and Quality Standards (pages 3-30 thru 3-34)

1. Realia (tangible items such as instruments, specimens, microscope slides, models, materials, etc.)
   a. Are realia requirements adequate?
   b. Is the quality of realia provided acceptable?
   c. If the program requires realia to be furnished by the user are those requirements reasonable and acceptable?
   d. Other criteria? (list)

2. Print
   a. Is the technical quality (type size, quality of print, duplication of half tones, paper quality, etc.) adequate for:
      1) Instructors guide?
      2) Study guide?
      3) Supplemental (handouts, tests, scripts, etc.)?
      4) Other criteria? (list)

   b. Does the script meet format requirements (3-33)?

(over)

1. is acceptable in present form
2. is acceptable with minor suggestions recommended
3. unacceptable - needs minor revision
4. unacceptable - needs major revision

Does Not Apply	1	2	3	4

3. Still Photography (Projection and Print 3-31)
   a. Does it meet format requirements?
   b. Is the technical quality (composition, lighting, physical condition, etc.) acceptable?
   c. Does it meet requirements for media transferability (3-36)?
   d. Are slides marked: 1) for projection orientation?
      2) with program title?
      3) with sequence number?
   e. Other criteria? (list)

4. Motion Media (Pages 3-30 thru 3-34)
   a. Does it meet format requirements (3-34)?
   b. Does it meet script requirements?
   c. Is the technical quality (contrast, lighting, video & sync levels, etc.) acceptable?
   d. Is the direction and camerawork (angles, fields of view, continuity, etc.) acceptable?
   e. Is the talent performance acceptable?
   f. Are production techniques and editing acceptable?
   g. Is the pacing and/or sequencing acceptable?
   h. Other criteria? (list)

5. Sound Recording for Slide Tapes
   a. Does it meet format requirements (3-30)?
   b. Does the narration agree with the script verbatim?
   c. Is the technical quality acceptable?
   d. Is the talent performance acceptable?
   e. Are the production and editing techniques acceptable?
   f. Is pacing and/or sequencing acceptable?
   g. If syncronous slide/tape, is script marked for slide changes and/or pauses?
   h. Other criteria? (list)

6. Art Work (3-31)
   a. Does it meet the format requirements?
   b. Does it meet legibility requirements?
   c. Is the quality acceptable?
   d. Other criteria? (list)

Summary: Based on your overall assessment, the media:

_____ is recommended for approval in present form.
_____ is recommended for approval with minor revisions suggested.
_____ is not recommended for approval and needs minor revisions.
_____ is unacceptable and needs major revisions

(Use Supplemental Sheets for Comments)